

REMARKS

Applicants respectfully request further examination and reconsideration in view of the above amendments and the comments set forth fully below. Claims 27-30, 35-38, 40, 42 and 44-48 were pending. Within the Office Action, Claims 27-30, 35-38, 40, 42 and 44-48 have been rejected. By the above amendments, Claims 30 and 45-48 have been amended and new Claim 49 has been added. Accordingly, Claims 27-30, 35-38, 40, 42 and 44-49 are now pending.

Rejections Under 35 U.S.C. § 102

Within the Office Action, Claims 27-30, 35-38, 40, 42 and 44-48 have been rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,368,823 to McGraw et al. (hereinafter “McGraw”). The applicants respectfully disagree. McGraw teaches automated synthesis of oligonucleotides. McGraw teaches that columns 11 are formed into a carrier plate 8 or built to fit within Luer fittings. McGraw does not teach a vial comprising a bored interior having a consistent dimension to hold a frit for retaining material within the vial directly above the frit and maintaining a consistent flow through the bored interior during a flushing procedure.

A close-up view of the reaction column 11 taught by McGraw is shown in Figure 2. [McGraw, col. 5, lines 49-52, Figure 2] McGraw teaches that a Luer fitting 15 is fitted into a bulkhead 16. [McGraw, col. 5, lines 45-52, Figures 5 and 6] McGraw then teaches that the column 11 is inserted into the Luer fitting 15. [McGraw, col. 5, lines 51-52, Figures 5 and 6] McGraw does not teach that the column 11 is fitted directly into a bulkhead 16. Accordingly, McGraw does not teach that a pressure-tight seal is provided directly between the column 11 and the bulkhead 16. In contrast, McGraw teaches that the column is inserted into the Luer fitting 15, which has previously been inserted into the bulkhead 16. McGraw does not teach a *direct* fit between the column 11 and the bulkhead 16.

McGraw also teaches that the support 100 is placed on the frit 9 and a second frit 9A is located over the support 100. [McGraw, col. 5, lines 52-55, Figure 6] Thus, McGraw does not teach that the solid support is retained within the column *directly* above the frit. In contrast, McGraw teaches the support 100 is positioned between the frit 9 and the frit 9A. Furthermore, McGraw does not teach using a single frit; rather two frits, 9 and 9A, are required. [McGraw, Figure 6] Every term of a claim must be afforded meaning, and the term “single” in Claims 30

and 45-48 would have no meaning if prior art with two frits equaled something that only has a “single” frit. Further, per the Examiner’s suggestion, the language “*vial* consisting essentially of a single frit” has been used in these claims.

Within the Office Action, it is stated that the McGraw reference shows the Luer fitting as a part of the bulkhead 16 since Figure 5 shows the Luer fitting extending through the bulkhead. The applicants respectfully disagree. McGraw does not teach that the column 11 is *directly* placed into the bulkhead 16. With respect to Figure 5, McGraw teaches

[t]he bulkhead 16 is sealed to the top of the solid frame 17' by means of the seal 95 such that the exit basin 17 is not connected to the atmosphere in the reaction chamber 10 except through the *Luer fittings 15 which receive the reaction columns 11*. [McGraw, col. 5, lines 44-48, Figure 5, emphasis added]

With respect to Figure 6, McGraw teaches “[t]he column 11 has a conically-shaped outlet end *for insertion into a mating Luer fitting 15*.” [McGraw, col. 5, lines 51-52, Figure 6, emphasis added.] The Luer fitting 15 and the bulkhead 16 are not one entity. As is well known in the art or can be discovered by quickly searching Google, Luer fittings 15 are a completely independent component, separate from the bulkhead 16. Although Figure 5 shows the Luer fitting 15 extending through the bulkhead 16, that does not make the two components one. The Luer fitting 15 of McGraw is inserted into the bulkhead 16 and then the column 11 is inserted into the Luer fitting 15. Therefore, McGraw teaches a column 11 being inserted into a Luer fitting 15 which is connected to a bulkhead 16. Thus, there is no *direct* contact between the column 11 and the bulkhead 16. Accordingly, McGraw does not teach that a pressure-tight seal is provided *directly* between the column and a cartridge, since for a seal to be *directly* between the column 11 and cartridge 16 there could be nothing in between. In McGraw, the Luer fittings 15 are in between the column 11 and the bulkhead 16. **McGraw clearly teaches that a Luer fitting 15 is positioned between the column 11 and the bulkhead 16.**

In contrast to the teachings of McGraw, the vial of the present invention includes a support held within the vial *directly* above a frit. [Present Specification, page 3, lines 24-25] The interior of each vial is precision bored to ensure a tight consistent seal with the corresponding frit. [Present Specification, page 3, lines 25-27] The vials are held within a cartridge. [Present Specification, page 3, lines 15-16] The exterior of each vial also has a precise dimension to consistently fit within the cartridge and provide a pressure tight seal around each vial *directly* within the cartridge. [Present Specification, page 3, line 27 - page 4, line 2] As discussed above,

McGraw does not teach that a pressure-tight seal is provided *directly* between the column and a cartridge. In contrast, McGraw teaches that the column is inserted into the Luer fitting 15, which has previously been inserted into the bulkhead 16. As further discussed above, McGraw does not teach that a solid support is retained within the vial *directly* above a frit. In contrast, McGraw teaches that the support 100 is positioned between the frit 9 and the frit 9A.

The independent Claim 27 is directed to a vial comprising a bored interior having a consistent dimension to hold a frit for retaining material within the vial *directly* above the frit and maintain a consistent flow through the bored interior during a flushing procedure by only forming a pressure differential to expel material from the vial and a solid support retained within the vial above the frit after the flushing procedure. As discussed above, McGraw does not teach that a solid support is retained within the vial *directly* above a frit. In contrast, McGraw teaches that the support 100 is positioned between the frit 9 and the frit 9A. For at least these reasons, the independent Claim 27 is allowable over the teachings of McGraw.

Claim 28 is dependent on the independent Claim 27 and adds a further limitation specifying that the vial comprises an exterior dimension to fit *directly* within a receiving hole of a cartridge, thereby providing a pressure-tight seal *directly* between the vial and the cartridge. As discussed above, McGraw does not teach that a pressure-tight seal is provided *directly* between a vial and a cartridge. In contrast, McGraw teaches that the column 11 is inserted into the Luer fitting 15, which has previously been inserted into the bulkhead 16. Thus, it is clear from the teachings of McGraw that a pressure-tight seal is not provided *directly* between the column 11 and the bulkhead 16, but that the Luer fitting 15 is positioned between the column 11 and the bulkhead 16. For at least these reasons, the Claim 28 is allowable over the teachings of McGraw.

Claims 28 and 40 are both dependent on the independent Claim 27. As described above, the independent Claim 27 is allowable over the teachings of McGraw. Accordingly, the Claims 28 and 40 are both also allowable as being dependent on an allowable base claim.

The independent Claim 29 is directed to a vial comprising an exterior dimension to fit directly within a receiving hole of a cartridge thereby providing a pressure-tight seal *directly* between the vial and the cartridge, a bored interior having a consistent dimension to maintain a consistent flow through the bored interior during flushing procedures by only forming a pressure differential to expel material from the vial and a solid support retained within the vial above the frit after flushing procedures. As discussed above, McGraw does not teach that a pressure-tight seal is provided *directly* between the column and a cartridge. In contrast, McGraw teaches that

the column is inserted into the Luer fitting 15, which has previously been inserted into the bulkhead 16. Thus, it is clear from the teachings of McGraw that a pressure-tight seal is not provided *directly* between the column 11 and the bulkhead 16, but that the Luer fitting 15 is positioned between the column 11 and the bulkhead 16. As further discussed above, McGraw does not teach that a solid support is retained within the vial above a frit. In contrast, McGraw teaches that the support 100 is positioned between the frit 9 and the frit 9A. McGraw also does not teach that a vial includes a bored interior having a consistent dimension to maintain a consistent flow through the bored interior. For at least these reasons, the independent Claim 29 is allowable over the teachings of McGraw.

Claims 30 and 42 are both dependent on the independent Claim 29. As described above, the independent Claim 29 is allowable over the teachings of McGraw. Accordingly, the Claims 30 and 42 are both also allowable as being dependent on an allowable base claim.

The independent Claim 35 is directed to a vial. The vial of Claim 35 comprises a bored interior having a consistent dimension to hold a frit for retaining material above the frit and maintain a consistent flow through the bored interior during a flushing procedure by only forming a pressure differential to expel material from the vial, a top opening through which material is dispensed into the bored interior, a bottom opening of a diameter to retain material within the bored interior when no pressure differential is applied and through which material is flushed during the flushing procedure, an exterior dimension to fit *directly* within a receiving hole of a cartridge, to form a pressure-tight seal *directly* between the vial and the cartridge when the vial is inserted into a receiving hole of the cartridge and a solid support retained within the vial above the frit after the flushing procedure. As discussed above, McGraw does not teach that a pressure-tight seal is provided *directly* between a vial and a cartridge. In contrast, McGraw teaches that the column is inserted into the Luer fitting 15, which has previously been inserted into the bulkhead 16. Thus, it is clear from the teachings of McGraw that a pressure-tight seal is not provided *directly* between the column 11 and the bulkhead 16, but that the Luer fitting 15 is positioned between the column 11 and the bulkhead 16. As further discussed above, McGraw does not teach that a solid support is retained within the vial above a frit. In contrast, McGraw teaches that the support 100 is positioned between the frit 9 and the frit 9A. McGraw also does not teach that a vial includes a bored interior having a consistent dimension to maintain a consistent flow through the bored interior. For at least these reasons, the independent Claim 35 is allowable over the teachings of McGraw.

Claim 44 is dependent on the independent Claim 35. As described above, the independent Claim 35 is allowable over the teachings of McGraw. Accordingly, the Claim 44 is also allowable as being dependent on an allowable base claim.

The independent Claim 36 is directed to a vial. The vial of Claim 36 comprises a frit, a solid support, a bored interior having a consistent dimension to hold the frit for retaining the solid support above the frit and maintain a consistent flow through the bored interior during a flushing procedure by only forming a pressure differential to expel material from the vial, wherein the solid support and material formed on the solid support is retained above the frit, within the vial, during a flushing procedure, a top opening through which material is dispensed into the bored interior, a bottom opening of a diameter to retain material within the bored interior when no pressure differential is applied and through which material is flushed during the flushing procedure and an exterior dimension to fit *directly* within a receiving hole of a cartridge to form a pressure-tight seal *directly* between the vial and a cartridge when the vial is inserted into a receiving hole of the cartridge. As discussed above, McGraw does not teach that a pressure-tight seal is provided *directly* between a vial and a cartridge. In contrast, McGraw teaches that the column is inserted into the Luer fitting 15, which has previously been inserted into the bulkhead 16. Thus, it is clear from the teachings of McGraw that a pressure-tight seal is not provided *directly* between the column 11 and the bulkhead 16, but that the Luer fitting 15 is positioned between the column 11 and the bulkhead 16. As further discussed above, McGraw does not teach that a solid support is retained within the vial above a frit. In contrast, McGraw teaches that the support 100 is positioned between the frit 9 and the frit 9A. McGraw also does not teach that a vial includes a bored interior having a consistent dimension to maintain a consistent flow through the bored interior. For at least these reasons, the independent Claim 36 is allowable over the teachings of McGraw.

Claims 37 and 38 are both dependent on the independent Claim 36. As described above, the independent Claim 36 is allowable over the teachings of McGraw. Accordingly, the Claims 37 and 38 are both also allowable as being dependent on an allowable base claim.

The independent Claim 45 is directed to a vial including a bored interior having a consistent dimension to hold a frit, the vial consisting essentially of a single frit for retaining material within the vial *directly* above the single frit and maintain a consistent flow through the bored interior during a flushing procedure by only forming a pressure differential to expel material from the vial and a solid support retained within the vial above the single frit after the flushing procedure. As discussed above, McGraw does not teach that a solid support is retained

within the vial *directly* above a *single* frit. In contrast, McGraw teaches that the support 100 is positioned between the frit 9 and the frit 9A. Further, McGraw does not teach a vial holding a *single* frit. McGraw teaches the frit 9 and the frit 9A. For at least these reasons, the independent Claim 45 is allowable over the teachings of McGraw.

The independent Claim 46 is directed to a vial including an exterior dimension to fit directly within a receiving hole of a cartridge thereby providing a pressure-tight seal *directly* between the vial and the cartridge, a bored interior having a consistent dimension to maintain a consistent flow through the bored interior during flushing procedures by only forming a pressure differential to expel material from the vial and a solid support retained within the vial above a frit, the vial consisting essentially of a single frit, after flushing procedures. As discussed above, McGraw does not teach that a pressure-tight seal is provided *directly* between the column and a cartridge. In contrast, McGraw teaches that the column is inserted into the Luer fitting 15, which has previously been inserted into the bulkhead 16. Thus, it is clear from the teachings of McGraw that a pressure-tight seal is not provided *directly* between the column 11 and the bulkhead 16, but that the Luer fitting 15 is positioned between the column 11 and the bulkhead 16. As further discussed above, McGraw does not teach that a solid support is retained within the vial above a *single* frit. In contrast, McGraw teaches that the support 100 is positioned between the frit 9 and the frit 9A. McGraw also does not teach that a vial includes a bored interior having a consistent dimension to maintain a consistent flow through the bored interior. Further, McGraw does not teach a solid support retained within the vial *directly* above a *single* frit. McGraw teaches the frit 9 and the frit 9A. For at least these reasons, the independent Claim 46 is allowable over the teachings of McGraw.

The independent Claim 47 is directed to a vial. The vial of Claim 47 comprises a bored interior having a consistent dimension, a material for growing a polymer chain and a frit for retaining the material within the vial directly above the frit and maintain a consistent flow through the bored interior during a flushing procedure by only forming a pressure differential to expel material from the vial and a solid support retained within the vial above the frit after the flushing procedure, the vial consisting essentially of a single frit. As discussed above, McGraw does not teach that a solid support is retained within the vial *directly* above a frit. In contrast, McGraw teaches that the support 100 is positioned between the frit 9 and the frit 9A. McGraw also does not teach that a vial includes a bored interior having a consistent dimension to maintain a consistent flow through the bored interior. For at least these reasons, the independent Claim 47 is allowable over the teachings of McGraw.

The independent Claim 48 is directed to a vial. The vial of Claim 48 comprises a bored interior having a consistent dimension to hold a frit, the vial consisting essentially of a single frit for retaining material within the vial directly above the single frit without any additional frits and maintain a consistent flow through the bored interior during a flushing procedure by only forming a pressure differential to expel material from the vial and a solid support retained within the vial above the single frit after the flushing procedure. As discussed above, McGraw does not teach a *single frit without any additional frits*. McGraw also does not teach that a solid support is retained within the vial above a single frit. In contrast, McGraw teaches that the support 100 is positioned between the frit 9 and the frit 9A. McGraw also does not teach that a vial includes a bored interior having a consistent dimension to maintain a consistent flow through the bored interior. For at least these reasons, the independent Claim 48 is allowable over the teachings of McGraw.

Within the Office Action, Claims 27-30, 35, 36, 38 and 45-48 have been rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,240,680 to Zuckermann et al. (hereinafter “Zuckermann”). The applicants respectfully disagree. Zuckermann teaches an actuation means for use in solid phase chemical synthesis involving arrays of modular reaction vessels. The apparatus taught by Zuckermann includes a plurality of reaction vessels arranged in a substantially linear array. [Zuckermann, Abstract] The reaction vessels of Zuckermann include modular valving means capable of being actuated to drain or close each of the reaction vessels in the array. [Zuckermann, Abstract] Specifically, Zuckermann teaches that a plug 28 is connected to a three-way valve 30 via tubing 32 to a source 36 of substantially inert gas. [Zuckermann, col. 3, lines 42-46, Figures 2 and 3] Zuckermann does not teach that a pressure-tight seal is provided directly between the column and a cartridge. Further, Zuckermann does not teach that a solid support is retained within the vial. Zuckermann also does not teach that a solid support is retained within the vial directly above a frit. Zuckermann does not teach maintaining a consistent flow through the bored interior of a vial during a flushing procedure by only forming a pressure differential to expel material. As described above, Zuckermann teaches that the three-way valve 30 is used to extract material from the reaction vessel.

In contrast to the teachings of Zuckermann, the vial of the present invention includes a support held within the vial directly above a frit. [Present Specification, page 3, lines 24-25] The interior of each vial is precision bored to ensure a tight consistent seal with the corresponding

frit. [Present Specification, page 3, lines 25-27] The vials are held within a cartridge. [Present Specification, page 3, lines 15-16] The exterior of each vial also has a precise dimension to consistently fit within the cartridge and provide a pressure tight seal around each vial directly within the cartridge. [Present Specification, page 3, line 27 - page 4, line 2] As discussed above, Zuckermann does not teach that a pressure-tight seal is provided directly between the column and a cartridge. Further, Zuckermann does not teach that a solid support is retained within the vial. Zuckermann also does not teach that a solid support is retained within the vial directly above a frit. As further discussed above, Zuckermann does not teach maintaining a consistent flow through the bored interior of a vial during a flushing procedure by only forming a pressure differential to expel material. As described above, Zuckermann teaches that the three-way valve 30 is used to extract material from the reaction vessel.

The independent Claim 27 is directed to a vial comprising a bored interior having a consistent dimension to hold a frit for retaining material within the vial *directly* above the frit and maintain a consistent flow through the bored interior during a flushing procedure by only forming a pressure differential to expel material from the vial and *a solid support* retained within the vial above the frit after the flushing procedure. As discussed above, Zuckermann does not teach that a solid support is retained within the vial directly above a frit. As further discussed above, Zuckermann does not teach maintaining a consistent flow through the bored interior of a vial during a flushing procedure by only forming a pressure differential to expel material. As described above, Zuckermann teaches that the three-way valve 30 is used to extract material from the reaction vessel. For at least these reasons, the independent Claim 27 is allowable over the teachings of Zuckermann.

Claim 28 is dependent on the independent Claim 27 and adds a further limitation specifying that the vial comprises an exterior dimension to fit *directly* within a receiving hole of a cartridge, thereby providing a pressure-tight seal directly between the vial and the cartridge. As discussed above, Zuckermann does not teach that a pressure-tight seal is provided directly between a vial and a cartridge. For at least these reasons, the Claim 28 is allowable over the teachings of Zuckermann.

Claims 28 and 40 are both dependent on the independent Claim 27. As described above, the independent Claim 27 is allowable over the teachings of Zuckermann. Accordingly, the Claims 28 and 40 are both also allowable as being dependent on an allowable base claim.

The independent Claim 29 is directed to a vial comprising an exterior dimension to fit directly within a receiving hole of a cartridge thereby providing a pressure-tight seal *directly*

between the vial and the cartridge, a bored interior having a consistent dimension to maintain a consistent flow through the bored interior during flushing procedures by only forming a pressure differential to expel material from the vial and *a solid support* retained within the vial above the frit after flushing procedures. As discussed above, Zuckermann does not teach that a pressure-tight seal is provided directly between the column and a cartridge. As further discussed above, Zuckermann does not teach that a solid support is retained within the vial above a frit. Zuckermann also does not teach that a vial includes a bored interior having a consistent dimension to maintain a consistent flow through the bored interior. As further discussed above, Zuckermann does not teach maintaining a consistent flow through the bored interior of a vial during a flushing procedure by only forming a pressure differential to expel material. As described above, Zuckermann teaches that the three-way valve 30 is used to extract material from the reaction vessel. For at least these reasons, the independent Claim 29 is allowable over the teachings of Zuckermann.

Claims 30 and 42 are both dependent on the independent Claim 29. As described above, the independent Claim 29 is allowable over the teachings of Zuckermann. Accordingly, the Claims 30 and 42 are both also allowable as being dependent on an allowable base claim.

The independent Claim 35 is directed to a vial. The vial of Claim 35 comprises a bored interior having a consistent dimension to hold a frit for retaining material above the frit and maintain a consistent flow through the bored interior during a flushing procedure by only forming a pressure differential to expel material from the vial, a top opening through which material is dispensed into the bored interior, a bottom opening of a diameter to retain material within the bored interior when no pressure differential is applied and through which material is flushed during the flushing procedure, an exterior dimension to fit *directly* within a receiving hole of a cartridge, to form a pressure-tight seal *directly* between the vial and the cartridge when the vial is inserted into a receiving hole of the cartridge and *a solid support* retained within the vial above the frit after the flushing procedure. As discussed above, Zuckermann does not teach that a pressure-tight seal is provided directly between a vial and a cartridge. As further discussed above, Zuckermann does not teach that a solid support is retained within the vial above a frit. Zuckermann also does not teach that a vial includes a bored interior having a consistent dimension to maintain a consistent flow through the bored interior. As further discussed above, Zuckermann does not teach maintaining a consistent flow through the bored interior of a vial during a flushing procedure by only forming a pressure differential to expel material. As described above, Zuckermann teaches that the three-way valve 30 is used to extract material from

the reaction vessel. For at least these reasons, the independent Claim 35 is allowable over the teachings of Zuckermann.

Claim 44 is dependent on the independent Claim 35. As described above, the independent Claim 35 is allowable over the teachings of Zuckermann. Accordingly, the Claim 44 is also allowable as being dependent on an allowable base claim.

The independent Claim 36 is directed to a vial. The vial of Claim 36 comprises a frit, *a solid support*, a bored interior having a consistent dimension to hold the frit for retaining the solid support above the frit and maintain a consistent flow through the bored interior during a flushing procedure by only forming a pressure differential to expel material from the vial, wherein the solid support and material formed on the solid support is retained above the frit, within the vial, during a flushing procedure, a top opening through which material is dispensed into the bored interior, a bottom opening of a diameter to retain material within the bored interior when no pressure differential is applied and through which material is flushed during the flushing procedure and an exterior dimension to fit *directly* within a receiving hole of a cartridge to form a pressure-tight seal *directly* between the vial and a cartridge when the vial is inserted into a receiving hole of the cartridge. As discussed above, Zuckermann does not teach that a pressure-tight seal is provided directly between a vial and a cartridge. As further discussed above, Zuckermann does not teach that a solid support is retained within the vial above a frit. Zuckermann also does not teach that a vial includes a bored interior having a consistent dimension to maintain a consistent flow through the bored interior. As further discussed above, Zuckermann does not teach maintaining a consistent flow through the bored interior of a vial during a flushing procedure by only forming a pressure differential to expel material. As described above, Zuckermann teaches that the three-way valve 30 is used to extract material from the reaction vessel. For at least these reasons, the independent Claim 36 is allowable over the teachings of Zuckermann.

Claims 37 and 38 are both dependent on the independent Claim 36. As described above, the independent Claim 36 is allowable over the teachings of Zuckermann. Accordingly, the Claims 37 and 38 are both also allowable as being dependent on an allowable base claim.

The independent Claim 45 is directed to a vial including a bored interior having a consistent dimension to hold a frit, the vial consisting essentially of a single frit for retaining material within the vial *directly* above the single frit and maintain a consistent flow through the bored interior during a flushing procedure by only forming a pressure differential to expel material from the vial and *a solid support* retained within the vial above the single frit after the

flushing procedure. As discussed above, Zuckermann does not teach that a solid support is retained within the vial directly above a single frit. As further discussed above, Zuckermann does not teach maintaining a consistent flow through the bored interior of a vial during a flushing procedure by only forming a pressure differential to expel material. As described above, Zuckermann teaches that the three-way valve 30 is used to extract material from the reaction vessel. For at least these reasons, the independent Claim 45 is allowable over the teachings of Zuckermann.

The independent Claim 46 is directed to a vial including an exterior dimension to fit directly within a receiving hole of a cartridge thereby providing a pressure-tight seal *directly* between the vial and the cartridge, a bored interior having a consistent dimension to maintain a consistent flow through the bored interior during flushing procedures by only forming a pressure differential to expel material from the vial and *a solid support* retained within the vial above a frit, the vial consisting essentially of a single frit, after flushing procedures. As discussed above, Zuckermann does not teach that a pressure-tight seal is provided directly between the column and a cartridge. As further discussed above, Zuckermann does not teach that a solid support is retained within the vial above a single frit. Zuckermann also does not teach that a vial includes a bored interior having a consistent dimension to maintain a consistent flow through the bored interior. As further discussed above, Zuckermann does not teach maintaining a consistent flow through the bored interior of a vial during a flushing procedure by only forming a pressure differential to expel material. As described above, Zuckermann teaches that the three-way valve 30 is used to extract material from the reaction vessel. For at least these reasons, the independent Claim 46 is allowable over the teachings of Zuckermann.

The independent Claim 47 is directed to a vial. The vial of Claim 47 comprises a bored interior having a consistent dimension, a material for growing a polymer chain and a frit for retaining the material within the vial directly above the frit and maintain a consistent flow through the bored interior during a flushing procedure by only forming a pressure differential to expel material from the vial and *a solid support* retained within the vial above the frit after the flushing procedure, the vial consisting essentially of a single frit. As discussed above, Zuckermann does not teach that a solid support is retained within the vial directly above a frit. Zuckermann also does not teach that a vial includes a bored interior having a consistent dimension to maintain a consistent flow through the bored interior. As further discussed above, Zuckermann does not teach maintaining a consistent flow through the bored interior of a vial during a flushing procedure by only forming a pressure differential to expel material. As

described above, Zuckermann teaches that the three-way valve 30 is used to extract material from the reaction vessel. For at least these reasons, the independent Claim 47 is allowable over the teachings of Zuckermann.

The independent Claim 48 is directed to a vial. The vial of Claim 48 comprises a bored interior having a consistent dimension to hold a frit, the vial consisting essentially of a single frit for retaining material within the vial directly above the single frit without any additional frits and maintain a consistent flow through the bored interior during a flushing procedure by only forming a pressure differential to expel material from the vial and *a solid support* retained within the vial above the single frit after the flushing procedure. As discussed above, Zuckermann does not teach that a solid support is retained within the vial above a single frit. Zuckermann also does not teach that a vial includes a bored interior having a consistent dimension to maintain a consistent flow through the bored interior. As further discussed above, Zuckermann does not teach maintaining a consistent flow through the bored interior of a vial during a flushing procedure by only forming a pressure differential to expel material. As described above, Zuckermann teaches that the three-way valve 30 is used to extract material from the reaction vessel. For at least these reasons, the independent Claim 48 is allowable over the teachings of Zuckermann.

Within the Office Action, Claims 27-30, 35, 36, 38 and 45-48 have been rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,609,826 to Cargill et al. (hereinafter "Cargill"). The applicants respectfully disagree. Cargill teaches methods and apparatus for the generation of chemical libraries. Cargill teaches that reaction chambers 110 include a body portion 112 having a top opening 118 and a gas input port 122. [Cargill, col. 7, lines 45-56, Figure 2A] Cargill also teaches that a lower portion 114 of the reaction chamber 110 can receive a frit 124. [Cargill, col. 7, lines 65-67, Figure 2A] The reaction chamber 110 of Cargill also includes a funnel portion 130 and a generally cylindrical drain tube 132, which includes an annular sealing bead 134 to create a seal against the outside of an S-shaped trap tube 136. [Cargill, col. 8, lines 11-21, Figures 2A and 3] Cargill teaches that the trap tube 136 connects to a drain tube 138 such that when the reaction chamber 110 is pressurized, liquid flows through the trap tube 136 and out the drain tube 138. [Cargill, col. 8, lines 23-29, Figures 2A and 3] Cargill does not teach that a pressure-tight seal is provided directly between a column and a cartridge. Cargill also does not teach maintaining a consistent flow through the bored interior of a vial during a flushing procedure by only forming a pressure differential to expel material. As described above, Cargill teaches that the annular sealing bead 134 creates a seal and when the

reaction chamber 110 is pressurized, liquid flows through the trap tube 136 and out the drain tube 138.

In contrast to the teachings of Cargill, the vial of the present invention includes a support held within the vial directly above a frit. [Present Specification, page 3, lines 24-25] The interior of each vial is precision bored to ensure a tight consistent seal with the corresponding frit. [Present Specification, page 3, lines 25-27] The vials are held within a cartridge. [Present Specification, page 3, lines 15-16] The exterior of each vial also has a precise dimension to consistently fit within the cartridge and provide a pressure tight seal around each vial directly within the cartridge. [Present Specification, page 3, line 27 - page 4, line 2] As discussed above, Cargill does not teach that a pressure-tight seal is provided directly between the column and a cartridge. As further discussed above, Cargill does not teach maintaining a consistent flow through the bored interior of a vial during a flushing procedure by only forming a pressure differential to expel material. As described above, Cargill teaches that the annular sealing bead 134 creates a seal and when the reaction chamber 110 is pressurized, liquid flows through the trap tube 136 and out the drain tube 138.

The independent Claim 27 is directed to a vial comprising a bored interior having a consistent dimension to hold a frit for retaining material within the vial directly above the frit and maintain a consistent flow through the bored interior during a flushing procedure by only forming a pressure differential to expel material from the vial and a solid support retained within the vial above the frit after the flushing procedure. As discussed above, Cargill does not teach maintaining a consistent flow through the bored interior of a vial during a flushing procedure by only forming a pressure differential to expel material. As described above, Cargill teaches that the annular sealing bead 134 creates a seal and when the reaction chamber 110 is pressurized, liquid flows through the trap tube 136 and out the drain tube 138. For at least these reasons, the independent Claim 27 is allowable over the teachings of Cargill.

Claim 28 is dependent on the independent Claim 27 and adds a further limitation specifying that the vial comprises an exterior dimension to fit directly within a receiving hole of a cartridge, thereby providing a pressure-tight seal directly between the vial and the cartridge. As discussed above, Cargill does not teach that a pressure-tight seal is provided directly between a vial and a cartridge. For at least these reasons, the Claim 28 is allowable over the teachings of Cargill.

Claims 28 and 40 are both dependent on the independent Claim 27. As described above, the independent Claim 27 is allowable over the teachings of Cargill. Accordingly, the Claims 28 and 40 are both also allowable as being dependent on an allowable base claim.

The independent Claim 29 is directed to a vial comprising an exterior dimension to fit directly within a receiving hole of a cartridge thereby providing a pressure-tight seal directly between the vial and the cartridge, a bored interior having a consistent dimension to maintain a consistent flow through the bored interior during flushing procedures by only forming a pressure differential to expel material from the vial and a solid support retained within the vial above the frit after flushing procedures. As discussed above, Cargill does not teach that a pressure-tight seal is provided directly between the column and a cartridge. As further discussed above, Cargill does not teach that a vial includes a bored interior having a consistent dimension to maintain a consistent flow through the bored interior. As further discussed above, Cargill does not teach maintaining a consistent flow through the bored interior of a vial during a flushing procedure by only forming a pressure differential to expel material. As described above, Cargill teaches that the annular sealing bead 134 creates a seal and when the reaction chamber 110 is pressurized, liquid flows through the trap tube 136 and out the drain tube 138. For at least these reasons, the independent Claim 29 is allowable over the teachings of Cargill.

Claims 30 and 42 are both dependent on the independent Claim 29. As described above, the independent Claim 29 is allowable over the teachings of Cargill. Accordingly, the Claims 30 and 42 are both also allowable as being dependent on an allowable base claim.

The independent Claim 35 is directed to a vial. The vial of Claim 35 comprises a bored interior having a consistent dimension to hold a frit for retaining material above the frit and maintain a consistent flow through the bored interior during a flushing procedure by only forming a pressure differential to expel material from the vial, a top opening through which material is dispensed into the bored interior, a bottom opening of a diameter to retain material within the bored interior when no pressure differential is applied and through which material is flushed during the flushing procedure, an exterior dimension to fit directly within a receiving hole of a cartridge, to form a pressure-tight seal directly between the vial and the cartridge when the vial is inserted into a receiving hole of the cartridge and a solid support retained within the vial above the frit after the flushing procedure. As discussed above, Cargill does not teach that a pressure-tight seal is provided directly between a vial and a cartridge. Cargill also does not teach that a vial includes a bored interior having a consistent dimension to maintain a consistent flow through the bored interior. As further discussed above, Cargill does not teach maintaining a

consistent flow through the bored interior of a vial during a flushing procedure by only forming a pressure differential to expel material. As described above, Cargill teaches that the annular sealing bead 134 creates a seal and when the reaction chamber 110 is pressurized, liquid flows through the trap tube 136 and out the drain tube 138. For at least these reasons, the independent Claim 35 is allowable over the teachings of Cargill.

Claim 44 is dependent on the independent Claim 35. As described above, the independent Claim 35 is allowable over the teachings of Cargill. Accordingly, the Claim 44 is also allowable as being dependent on an allowable base claim.

The independent Claim 36 is directed to a vial. The vial of Claim 36 comprises a frit, a solid support, a bored interior having a consistent dimension to hold the frit for retaining the solid support above the frit and maintain a consistent flow through the bored interior during a flushing procedure by only forming a pressure differential to expel material from the vial, wherein the solid support and material formed on the solid support is retained above the frit, within the vial, during a flushing procedure, a top opening through which material is dispensed into the bored interior, a bottom opening of a diameter to retain material within the bored interior when no pressure differential is applied and through which material is flushed during the flushing procedure and an exterior dimension to fit directly within a receiving hole of a cartridge to form a pressure-tight seal directly between the vial and a cartridge when the vial is inserted into a receiving hole of the cartridge. As discussed above, Cargill does not teach that a pressure-tight seal is provided directly between a vial and a cartridge. Cargill also does not teach that a vial includes a bored interior having a consistent dimension to maintain a consistent flow through the bored interior. As further discussed above, Cargill does not teach maintaining a consistent flow through the bored interior of a vial during a flushing procedure by only forming a pressure differential to expel material. As described above, Cargill teaches that the annular sealing bead 134 creates a seal and when the reaction chamber 110 is pressurized, liquid flows through the trap tube 136 and out the drain tube 138. For at least these reasons, the independent Claim 36 is allowable over the teachings of Cargill.

Claims 37 and 38 are both dependent on the independent Claim 36. As described above, the independent Claim 36 is allowable over the teachings of Cargill. Accordingly, the Claims 37 and 38 are both also allowable as being dependent on an allowable base claim.

The independent Claim 45 is directed to a vial including a bored interior having a consistent dimension to hold a frit, the vial consisting essentially of a single frit for retaining material within the vial directly above the single frit and maintain a consistent flow through the

bored interior during a flushing procedure by only forming a pressure differential to expel material from the vial and a solid support retained within the vial above the single frit after the flushing procedure. As discussed above, Cargill does not teach maintaining a consistent flow through the bored interior of a vial during a flushing procedure by only forming a pressure differential to expel material. As described above, Cargill teaches that the annular sealing bead 134 creates a seal and when the reaction chamber 110 is pressurized, liquid flows through the trap tube 136 and out the drain tube 138. For at least these reasons, the independent Claim 45 is allowable over the teachings of Cargill.

The independent Claim 46 is directed to a vial including an exterior dimension to fit directly within a receiving hole of a cartridge thereby providing a pressure-tight seal directly between the vial and the cartridge, a bored interior having a consistent dimension to maintain a consistent flow through the bored interior during flushing procedures by only forming a pressure differential to expel material from the vial and a solid support retained within the vial above a frit, the vial consisting essentially of a single frit, after flushing procedures. As discussed above, Cargill does not teach that a pressure-tight seal is provided directly between the column and a cartridge. Cargill also does not teach that a vial includes a bored interior having a consistent dimension to maintain a consistent flow through the bored interior. As further discussed above, Cargill does not teach maintaining a consistent flow through the bored interior of a vial during a flushing procedure by only forming a pressure differential to expel material. As described above, Cargill teaches that the annular sealing bead 134 creates a seal and when the reaction chamber 110 is pressurized, liquid flows through the trap tube 136 and out the drain tube 138. For at least these reasons, the independent Claim 46 is allowable over the teachings of Cargill.

The independent Claim 47 is directed to a vial. The vial of Claim 47 comprises a bored interior having a consistent dimension, a material for growing a polymer chain and a frit for retaining the material within the vial directly above the frit and maintain a consistent flow through the bored interior during a flushing procedure by only forming a pressure differential to expel material from the vial and a solid support retained within the vial above the frit after the flushing procedure, the vial consisting essentially of a single frit. As discussed above, Cargill does not teach that a vial includes a bored interior having a consistent dimension to maintain a consistent flow through the bored interior. As further discussed above, Cargill does not teach maintaining a consistent flow through the bored interior of a vial during a flushing procedure by only forming a pressure differential to expel material. As described above, Cargill teaches that the annular sealing bead 134 creates a seal and when the reaction chamber 110 is pressurized,

liquid flows through the trap tube 136 and out the drain tube 138. For at least these reasons, the independent Claim 47 is allowable over the teachings of Cargill.

The independent Claim 48 is directed to a vial. The vial of Claim 48 comprises a bored interior having a consistent dimension to hold a frit, the vial consisting essentially of a single frit for retaining material within the vial directly above the single frit without any additional frits and maintain a consistent flow through the bored interior during a flushing procedure by only forming a pressure differential to expel material from the vial and a solid support retained within the vial above the single frit after the flushing procedure. As discussed above, Cargill does not teach that a vial includes a bored interior having a consistent dimension to maintain a consistent flow through the bored interior. As further discussed above, Cargill does not teach maintaining a consistent flow through the bored interior of a vial during a flushing procedure by only forming a pressure differential to expel material. As described above, Cargill teaches that the annular sealing bead 134 creates a seal and when the reaction chamber 110 is pressurized, liquid flows through the trap tube 136 and out the drain tube 138. For at least these reasons, the independent Claim 48 is allowable over the teachings of Cargill.

Applicants respectfully submit that the claims, as amended, are now in a condition for allowance, and allowance at an early date would be appreciated. Should the Examiner have any questions or comments, they are encouraged to call the undersigned at (408) 530-9700 to discuss the same so that any outstanding issues can be expeditiously resolved.

Respectfully submitted,
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Dated: December 8, 2006

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